

establishing sterility of the vessel.

29. (New) The apparatus of claim 28 wherein the hollow vessel is a cylinder having an integral bottom at one end and the sealed closure at an opposite end.

31 30. (New) The apparatus of claim 28 wherein the vessel is formed of a plastic material, for establishing the sterility of the vessel.--.

Remarks

Reconsideration of this patent application is respectfully requested, particularly as herein amended.

The Office Action of May 2, 2003, requires restriction under 35 U.S.C. §§121 and 372. Three groupings of claims are identified, including:

Group I, including claim 1, which is drawn to a method for applying a filling material to a root-canal instrument;

Group II, including claims 2 to 8, which are drawn to an apparatus for preparing a filling material for application to a root-canal instrument; and

Group III, including claim 9, which is drawn to a cartridge used with the application method and the material preparing apparatus.

In reply, applicant elects the subject matter of Group II for further examination in this patent application. Original claims 1 to 9 have been cancelled and replaced with a new series of claims 10 to 30, which have been drafted to better comply with the requirements of 35 U.S.C. §112, second paragraph. Claims 10 to 30 are drawn to an apparatus for providing a filling material, in paste form, for introduction into a canal of a tooth using a root-canal instrument, which corresponds to the elected subject matter of former claims 2 to 8 (identified in the Office Action as Group II). Applicant retains the right to pursue non-elected subject matter in an appropriate divisional application.

The Office Action further indicates that if the subject matter of Group II is elected, an election of species is required under PCT Rule 13.1. Two species are identified, including:

Species A of Figure 1; and

Species B of Figure 4 (and 5).


In reply, applicant elects the subject matter of Species A. Of the pending claims (10 to 30), claims 10, 11 and 26 to 30 are considered to be generic and claims 10 to 15 and 26 to 30 are considered to be readable on the elected species.

To further facilitate the examination of this patent application, a substitute specification and a revised abstract have been submitted herewith. A marked-up copy of the original specification showing the changes which have been made in the substitute specification has also been enclosed, on separate pages, in accordance with the requirements of 37 C.F.R. §1.121.

The substitute specification includes no new matter, and includes the same changes as are indicated in the marked-up copy of the original specification. The Abstract has been reproduced on a separate sheet enclosed with this Reply, in accordance with the requirements of 37 C.F.R. §1.72(b). Entry of the enclosed substitute specification and the revised abstract is therefore respectfully requested to place the application in U.S. form.

It is submitted that the foregoing operates to fully respond to the issues presented in the Office Action of May 2, 2003. A continued and favorable examination of the elected subject matter is respectfully requested.

Respectfully submitted,


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BACKGROUND OF THE INVENTION

The present invention relates to the field of obturation methods for filling the root canals of teeth, and more specifically, to the phase of such methods where [actually filling] the canal in the tooth is filled using a filling material such as [of the] Gutta percha or some other type of material. The present invention relates, in particular, to the use of a filling material in the form of a paste which is introduced into the root canal using a root-canal instrument known as a "condenser", which comprises [comprising] a screw and which is arranged on a [handpiece.

The] handpiece. The present invention also relates to a device for making filling material available and to a container for containing the filling material.

Procedures for filling root canals are already known in the [prior art.

The prior] art. For [art, for] example, [discloses a] methods are known which make use of an instrument [consists in using instruments], the body of which is made of plastic [,] and onto which [the] Gutta percha is added. To perform the filling procedure, the assembly is introduced, after heating, into the

canal. A [, but the] major disadvantage with this method is that the plastic body remains in the canal and causes considerable inconvenience if the filling work being performed subsequently needs to be repeated.

Also known is a [The prior art also discloses the] method which arranges [consists in arranging] the filling material [product] on an instrument known as a "condenser", which takes [is in] the form of a root-canal instrument with a screw, for example, a left-hand screw, arranged on a handpiece so that the filling material can be deposited or "condensed" into the canal by rotating the instrument in the opposite direction to the hand of the screw. To coat the instrument with filling material, such as Gutta percha for example, the Gutta percha is arranged in a syringe placed in a heater and the plunger of the syringe is actuated [,] when the Gutta percha is ready [,] so as to deposit the Gutta percha [it] onto the root-canal instrument positioned adjacent to [just at] the outlet of the syringe.

Methods which make use of such condensers have [syringe. This method has] two disadvantages. On [: on] the one hand, such methods do [it does] not allow precise control over the amount of Gutta percha applied to the root-canal instrument. On [and, on] the other hand, because [as] the amount of Gutta percha contained in the syringe is great, the dental practitioner is strongly tempted to treat several root canals belonging to different patients using the same syringe. In this latter case, there is

then a risk [then] that the practitioner will contaminate the second patient (or patients) with bacteria from the first patient (or patients).

SUMMARY OF THE INVENTION

The present invention [sets out to] overcomes these drawbacks [of the prior art] by [proposing to] presenting the filling material in the form of at least one dose arranged in a [container of the] cartridge type container. Each [, each] dose is [being] an individual dose, corresponding [and corresponding] roughly to the amount needed to treat and fill just one canal. The [, the] root-canal instrument is [being] plunged, rotating or stationary, into one of the [said] cartridges containing a dose of filling material, providing [this making it possible for] just the amount of filling material needed to carry out the operation of filling the root canal so that the proper amount of filling material is [to be] picked up on the walls of the root-canal [instrument].

The procedure according to the invention therefore] instrument. This makes it possible to fill [carry out the phase of actually filling] the root canal of the tooth using just the amount of filling material needed, and under optimum hygiene conditions.

The device for making the filling material available in accordance with [according to] the present invention is notable in that it allows [comprises means allowing] at least one cartridge containing filling material in [the form of] a dose roughly corresponding to the amount needed to treat and fill one single canal to be brought up to and maintained at the desired temperature.

The [filling material container of the] cartridge type container for the filling material which [intended to] allows the filling of root canals in accordance with [according to] the present invention is notable in that it contains at least one dose of filling material roughly corresponding to the amount needed to treat and fill one single canal. The cartridge type container [It] can therefore be sold independently, or in large quantities, ready for use and disposable after use.

The present invention will be better understood with reference to [the aid of] the description [given hereinafter] of two embodiments of the invention which is [are] given below by way of example, together [nonlimiting examples] with [reference to] the following [appended] drawings. [in which:]

BRIEF DESCRIPTION OF THE DRAWINGS

[-] Figure [figure] 1 is [illustrates] an isometric [perspective]

view of a first alternative embodiment [the] device of [according to] the present invention. [according to a first alternative form,]

[-] Figure [figure] 2 illustrates the [a] phase of coating a root-canal instrument. [; and]

[-] Figure [figure] 3 is [illustrates] an enlarged cross-sectional view of a cartridge produced in accordance with [according to] the present invention which can be used with [, suited to] the device shown in Figure [of figure] 1. [,]

[-] Figure [figure] 4 is an isometric [perspective] view of a second alternative embodiment device of [according to] the present invention. [according to a second alternative form;]

[-] Figure [figure] 5 is an enlarged, [view in] longitudinal cross-sectional view of the device shown in Figure [figure] 4 [, on a different scale].

DETAILED DESCRIPTION OF THE INVENTION

The method of [according to] the present invention is a method for [the] filling [of] root canals using a filling material (1) such as [of the] Gutta percha or some other type of filling material. The filling material, in the form of a paste,

[which] is introduced into the root canal using a root-canal instrument (2) known as a "condenser", which comprises [comprising] a screw and which is arranged on a handpiece (3).

In accordance with the present invention, the [The method is characterized in that said] filling material (1) is in the form of a dose [number of doses] (4), each of which is arranged in a cartridge (5). Each [, each] dose (4) roughly corresponds [corresponding] to the amount of filling material needed to treat and fill one single canal.

To [Thus, to] deposit the [said] filling material (1) on the root-canal instrument (2), the root-canal instrument (2) is plunged, rotating or stationary, into one of the [said] cartridges (5) containing a dose (4) of the filling material (1) so that [as to pick up on its walls] just the amount of filling material needed for the filling operation is picked up on the walls of the root-canal instrument (2), as is illustrated in Figure [figure] 2.

To fill the root canal, all that is then required is for the root-canal instrument (2) to be correctly positioned [correctly] in the root canal and made to rotate in the opposite direction to the hand of the screw so as to fill the root canal with filling material [(1)].

It] (1). It should be noted that, by virtue of the method of [according to] the present invention, it is not necessary to reverse the direction of rotation of the screw of the root-canal instrument in order to load the screw [it] with filling material.

Figure 1 shows [The present invention also relates to] a device (6) [, illustrated in figure 1,] for making available filling material (1) of the Gutta percha type (or some other type) [,] in the form of a paste, for introduction [which is introduced] into the canal of a tooth using a root-canal instrument. The illustrated instrument (2), known as a "condenser", comprises [comprising] a screw and is arranged on a handpiece (3). The device (6) [, characterized in that it comprises means allowing] operates to allow at least one cartridge (5) containing filling material (1) in [the form of] a dose (4) roughly corresponding to the amount needed to treat and fill one single canal to be brought up to and maintained at the desired temperature.

The device (6) can [may], for example, take [be in] the form of a unit (7) comprising a number of recesses (8), [in] each of which can receive a cartridge (5). One or more of the recesses (8) are formed in a heat-conducting heating body (9) which can be heated, for example, using a resistive electric element, to raise [may be positioned].

The means for raising] at least one cartridge (5) to the desired temperature and to maintain the cartridge (5) [maintaining it] at that [temperature may, for example, consist in the fact that said recess or recesses (8) are formed in a heat-conducting heating body (9) heated using a resistive electric element.

The] temperature. The device (6) may further comprise a switch (10) and an operating indicator (11).

The [present invention also relates to a] cartridge (5) [,] illustrated in Figure [figure] 3 [, intended to allow a root canal to be filled using a filling material (1), characterized in that it] contains an individual dose (4) of filling material (1) roughly corresponding to the amount needed to treat and fill one single [canal.

Said] canal. The cartridge (5) is, for example, [in the] formed as [of] a hollow cylinder having [which has] a bottom [,] and is made of [plastic.

As a preference, said] plastic. The cartridge [cartridges] (5) is [are] also preferably equipped with a [means of] sealed closure, such as a [of the] stopper or a thermally bonded seal [type,] for example, that can be opened just before the filling material is to be picked [up.

Thus, the] up. The cartridges (5) of filling material (1) can be distributed [offered for sale] ready for use, and are disposable (i.e., [that is to say] ready to be heated in the device (6) and able to be disposed of after the contained filling material [they contain] has been used).

[Reference is now made to the device of figures 4 and 5.]

Figures 4 and 5 show a [The] device [with the general reference] (6') which essentially comprises a unit (7') equipped with the usual controls and supplies [which are usual] for an electrical device (e.g., switches, on-off indicator light, timer, [etc]).

In] etc.). In this alternative form, the cartridge (5') is placed in a pot (13) [comprising:

- a] comprising a central housing (14) for accommodating the [cartridge,
- a] cartridge, a thermal mass [(15),
- thermally] (15), and thermally insulated external surfaces (16, 17), with the surface [-] (16) surrounding [around] the body of the pot (13) and with the surface (17) extending over the top surface of the [said] pot (13).

The thermal mass (15) is accessible toward [towards] the bottom of the pot (13) and has a female cavity which accommodates

a heating rod [(18).

The] (18). The insulated surface (17) forms a lid on the pot (13), and [. It] has a circular shoulder (19) which collaborates with a trigger (20) articulated to the body (7') to allow [allowing] the pot (13), possibly with a [its] cartridge (5), to be locked in and released [in/released] from the device (6'). The [function of the] trigger (20) operates [is] to hold the pot (13) in its housing and, when the pot (13) [latter] is removed, to completely close off the housing to prevent dirt from entering the housing, which could then [as this would] disturb the contact between the heating body and the thermal mass of the pot (13). Furthermore, the trigger (20) [it] prevents the risk of contact between fingers and the high-temperature heating [body.

The] body. The thickness of the trigger (20) is such that it can be moved aside simply, under the pressure of the pot, held by hand by the user.

The thermal inertia of the mass (15) allows the user to work while leaving the device as it is, and handling only the pot and the cartridge it [contains.

The] contains. The pot and its thermal mass may be sterilized, while the doses (the cartridges) can [made] be

sold [sterile.

This] sterile. As a consequence, the device (6') is more flexible to use than the alternative device (6) shown [form] in Figures [figures] 1 to 3.